

## **REMARKS**

This Amendment and Response is submitted in response to the Office Action mailed 24 DECEMBER 2002. Withdrawal of the rejection and reconsideration with an eye toward allowance is respectfully requested.

Claims 2-3, 5-9 and 24-31 are pending after entry of the present amendment. Claims 1-9 stand rejected. Claims 1 and 4 are cancelled, 2-3 and 5-9 amended, and claims 24-31 added herein. The claim amendments are presented in a revised format per the USPTO's announcement 'Amendments in a Revised Format Now Permitted', signed 31 January 2002, and accordingly do not conform to the current reading of 37 C.F.R. §1.121, which Applicants understand has been waived. Accordingly, a complete listing of all claims that are, or were in the application, along with an appropriate status identifier, is provided above in the section entitled "Amendments to the Claims". Markings are provided on claims amended in the present amendment.

Support for the above new claims 24 and 30 can be found throughout the originally filed specification, for example, at page 17, line 27. Support for the above new claims 25-29 can be found, for example, at page 13, paragraph 2. Support for amended claims 2-3 and 5-9 can be found at least in the originally filed claims.

### **Priority**

Applicants note with appreciation the mailing of a Supplemental Office Action by the Examiner on 17 March 2003 withdrawing the objection to the specification and acknowledging Applicants' submitted Request to Correct Inventorship and amendment to the specification.

The Examiner suggests that provisional application 60/175,539 fails to provide support for the instantly claimed cartridge, and therefore states the effective filing date for instant claims 1-9 is the filing date of parent applications 09/760,384 and PCT/US01/00150 (January 11, 2001).

Presently pending claims 2-3, 5-9 and 24-32 are generally drawn to a cartridge comprising a substrate comprising an array of electrodes, each comprising a self-assembled monolayer and a capture binding ligand.

Applicants respectfully draw the Examiner's attention to page 1, lines 19-24 of Provisional Application Number 60/175,539 (hereafter "the '539 application"). The '539 application clearly discloses a cartridge comprising a biochip (see page 1, lines 16-17). Further, the '539 application clearly discloses an embodiment of a biochip comprising electrodes with self-assembled monolayers and capture probes (see page 1, lines 19-21). One such embodiment with arrays is shown, for example in the Figures on page 3 of the publication appended as part of the provisional application.

The '539 application also incorporates several documents by reference, including U.S.S.N. 09/338,726 (see page 1, line 23), now U.S. Patent Number 6,264,825 (hereafter "the '825 patent"). The '825 patent clearly discloses electrodes comprising a self-assembled monolayer and a capture probe (see, for example, FIGS. 3A-3C). The Examiner's attention is specifically directed to col. 15, lines 12-19 which states that "... in a preferred embodiment, the present invention provides biochips (sometimes referred to herein "chips") that comprise substrates comprising a plurality of electrodes, preferably gold electrodes. The number of electrodes is as outlined for arrays. Each electrode preferably comprises a self-assembled monolayer as outlined herein. In a preferred embodiment, one of the monolayer-forming species comprises a capture ligand as outlined herein."

Applicants note that the limitations on the material which may be incorporated by reference in U.S. patent applications which are to issue as U.S. patents do not apply to applications relied on only to establish an earlier effective filing date under 35 U.S.C. 119. An application is entitled to rely upon the filing date of an earlier application, even if the earlier application itself incorporates essential material by reference to another document. (M.P.E.P. §608.01(p)). See *Ex parte Maziere*, 27 USPQ2d 1705, 1706-07 (Bd. Pat. App. & Inter. 1993).

As described above, Applicants submit that the '539 application, either alone or in conjunction with the '825 patent which is incorporated by reference in the '539 application, provides support for the presently pending claims at least insofar as the claims are directed to a cartridge comprising a substrate comprising an array of electrodes, each comprising a self-assembled monolayer and a capture binding ligand.

Applicant's claim 6 further recites a reaction chamber configured to minimize the introduction or retention of air bubbles upon introduction of a sample. The Examiner's attention is respectfully drawing to the slide numbered 30 in the '539 application, which recites that one embodiment of a cartridge allows no bubbles while filing. Accordingly, Applicants submit that the '539 application provides support for the presently pending claims reciting a reaction chamber configured to minimize the introduction or retention of air bubbles upon introduction of a sample.

Applicant's claim 24 further recites a substrate comprising a printed circuit board. The Examiner's attention is respectfully drawn to the '539 application, page 1, line 26-27 reciting that there may be a PC board component comprising the electrode. Accordingly, Applicants submit that the '539 application provides support for the presently pending claims reciting a printed circuit board.

Applicant's claim 26 further recites a valve including a semipermeable membrane. The Examiner's attention is respectfully drawn to the '539 application, to the slide labeled number 22, reciting several embodiments of seals, including valves. Further, the '539 application incorporates U.S.S.N. 09/295,691 by reference at page 1, line 24 (hereinafter, the '691 application). The '691 application at page 41, lines 4-6 recites several embodiments of seals. Accordingly, Applicants submit that the '539 application, and particularly the '539 application in conjunction with the '691 application provide support for the present claims reciting a valve.

Accordingly, Applicants respectfully submit that the filing date of the presently pending claims is at least the filing date of the '539 application, namely 11 January 2000, and the application should be examined accordingly.

#### **Claim Rejections – 35 U.S.C. §102**

Claims 1-3, 5 and 7 were rejected under 35 U.S.C. §102(b) as being anticipated by Wohlstadter et al. (WO 98/12539, published 26 March 1998). Without admitting the propriety of the rejection, Applicants have cancelled claim 1, without prejudice or disclaimer towards presenting it in a related application. Applicants have amended claims 2-4, 5 and 7 to be multiple dependent claims depending from independent claim 6, 24, or 26.

Wohlstadter discloses supports having a plurality of binding domains (see, for example, Wohlstadter, page 17, lines 32-33). A plurality of electrodes are disclosed which are able to trigger electrochemiluminescent emission from a binding domain (see, for example, Wohlstadter, page 18, lines 4-7).

In contrast, Applicant's claim 6 recites a cartridge comprising a reaction chamber configured to minimize the introduction or retention of air bubbles upon introduction of a sample. Applicant's independent claim 24 recites a substrate comprising printed circuit board. Applicant's independent claim 26 recites an inlet port comprising a valve having a semipermeable membrane.

As the Examiner is aware, for a reference to anticipate a claim, the reference must teach every element of the claim (see M.P.E.P §2131).

Applicants respectfully submit that Wohlstadter fails to disclose or suggest either i) a reaction chamber configured to minimize the introduction or retention of air bubbles upon introduction of a sample; ii) a substrate comprising printed circuit board; or iii) a valve having a semipermeable membrane. Accordingly, Applicants submit that the 35 U.S.C. §102(b) rejection of claims 1-3, 5, and 7 is improper and should be withdrawn.

Claims 1, 2, and 9 were rejected under 35 U.S.C. §102(a) as being anticipated by Kayyem, J. (WO 00/62931, published 26 October 2000). Without admitting the propriety of the rejection, Applicants have cancelled claim 1.

As described above, Applicants submit that the proper priority date for claims 2 and 9 is 11 January 2000 (predating the Kayyem 26 October 2000 publication). Applicants trust that the above perfection of the priority claim obviates the 35 U.S.C. §102(a) rejection of claims 1, 2, and 9 over Kayyem.

#### **Claim Rejections – 35 U.S.C. §103**

Claims 4, 6, and 8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Wohlstadter et al. (WO 98/12539) in view of Schembri et al. (U.S. Patent Number 6,258,593, filed 30 June 1999). Without admitting the propriety of the rejection, Applicants have cancelled claim 4, without

prejudice or disclaimer towards presenting it in a related application. Applicants have amended claim 8 to be a multiple dependent claim depending from claim 6, 24, or 26.

Wohlstadter is discussed above.

Schembri et. al. disclose an apparatus for conducting chemical or biochemical reactions on a solid surface within an enclosed chamber (see Schembri, abstract). After a reaction is performed, an array may be read with a confocal scanner (see Schembri, col. 18, lines 28-31. Schembri does not disclose self-assembled monolayers. Further, Schembri discloses a method for mixing with a bubble in a chamber and methods to ensure a bubble is contained within a chamber.

In contrast, claim 6 recites a reaction chamber configured to minimize the introduction or retention of air bubbles upon introduction of a sample. Claim 8 depends from and includes all limitations of either claim 6, 24, or 26. Claim 24 recites a substrate comprising a printed circuit board, and claim 26 recites an inlet port comprising a valve having a semipermeable membrane.

Applicants note that to establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference teachings. Further, the cited reference (or references when combined) must teach or suggest all the claim limitations. (See M.P.E.P. §2142).

Applicants respectfully submit that Wohlstadter and Schembri fail to provide the required motivation to combine the references. The Examiner states that it would have been obvious to combine the teachings for the expected benefit of improving and facilitating reagent mixing. The Examiner's attention is respectfully drawn to *In re Lee*, 61 USPQ2d 1430 (CA FC 2002). In this case, an examiner rejected claims under 35 U.S.C. §103 and upon appeal to the Board of Patent Appeals and Interferences the Board stated that the required motivation to combine prior art references "may be made from common knowledge and common sense of a person of ordinary skill in the art without any specific hint or suggestion in a particular reference." *Id* at 1432. The Federal Circuit rejected this analysis as "legal error and arbitrary agency action." *Id* at 1434. The Federal Circuit made clear that the Board's finding must extend to all material facts and must be documented on the record, lest the "haze of so-called expertise" acquire insulation from accountability. "Common knowledge" and "common sense", even if assumed to derived from the agency's expertise, do not substitute for authority when the law requires authority." (citing *In re Zurko*, 59 USPQ2d 1693 (CA FC 2001); see *Lee*, 1434-1435).

Moreover, Applicants submit that Wohlstadter and Schembri, alone or in combination, fail to disclose all limitations of Applicants' claims 6, 24, and 26.

As per claim 6, Applicants respectfully submit that Schembri does not disclose a chamber designed to minimize the introduction or retention of air bubbles, but rather a chamber designed to retain an air bubble and conduct mixing with the bubble (see Schembri, col. 25, lines 25-42). Accordingly, Applicants respectfully submit that Schembri teaches away from Applicants' claim 6 by disclosing the advantageous use of a bubble. A reference which leads one away from the claimed invention cannot

render the invention obvious. See *Dow Chemical v. American Cyanamid*, 2 USPQ 2d 1350 (Fed. Cir. 1987).

As per claim 24, Applicants respectfully submit that Wohlstadter and Schembri, alone or in combination, fail to disclose or suggest a substrate comprising a printed circuit board. As per claim 26, Applicants respectfully submit that Wohlstadter and Schembri, alone or in combination, fail to disclose or suggest an inlet port comprising a valve including a semipermeable membrane. Schembri discloses access ports suitable for providing fluid inflow and outflow, and for the introduction of gases (Schembri, col. 11, lines 20-21). Accordingly, Applicants respectfully submit that Schembri teaches away from Applicants' claim 26 by disclosing a port for the introduction of gases. A reference which leads one away from the claimed invention cannot render the invention obvious. See *Dow Chemical v. American Cyanamid*, 2 USPQ 2d 1350 (Fed. Cir. 1987).

Accordingly, Applicants submit that the 35 U.S.C. §103(a) rejection of claims 6 and 8 over Wohlstadter in view of Schembri is improper and should be withdrawn.

Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Wohlstadter et al in view of Anderson et al (U.S. Patent Number 6,326,211, filed 10 March 2000). Claim 9 has been amended as a multiple dependent claim, depending from claim 6, 24, or 26.

As a preliminary manner, Applicants note that the filing date of the Anderson reference is March 10, 2000. As discussed above, Applicants respectfully submit that the priority date of the instant application is at least January 11, 2000. Accordingly, Applicants submit that a rejection over the Anderson reference is improper, as the Anderson reference does not represent prior art for the instant claims. Although Applicant trusts that Anderson will be removed as a reference, the rejection is discussed further below for completion.

Wohlstadter is discussed above.

Anderson discloses a device for performing sample acquisition and preparation operations (see Anderson, col.5, lines 12-14). Data is gathered from the array by exciting fluorescently labeled targets (see Anderson, col. 16, lines 62-65).

In contrast, Applicants' claim 9 depends from and includes all limitations of Applicants' claim 6, 24, or 26, including respectively i) a reaction chamber configured to minimize the introduction or retention of air bubbles upon introduction of a sample; ii) a substrate comprising a printed circuit board; or iii) an inlet port comprising a valve including a semipermeable membrane.

Applicants note that to establish a prima facie case of obviousness, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference teachings. Further, the cited reference (or references when combined) must teach or suggest all the claim limitations. (See M.P.E.P. §2142).

Applicants respectfully submit that Wohlstadter and Anderson fail to provide the required motivation to combine the references to result in Applicants claimed invention. The Examiner's attention

Serial No.: 09/904,175  
Filing Date: 11 JULY 2001


is respectfully drawn to In re Lee, 61 USPQ2d 1430 (CA FC 2002), described above, and incorporated again here by reference.

Applicants respectfully submit that Wohlstadter and Anderson, alone or in combination, fail to disclose or suggest at least i) a reaction chamber configured to minimize the introduction or retention of air bubbles upon introduction of a sample; ii) a substrate comprising a printed circuit board; or iii) an inlet port comprising a valve including a semipermeable membrane. Accordingly, Applicants submit that the 35 U.S.C. §103(a) rejection of claim 9 over Wohlstadter in view of Schembri is improper and should be withdrawn.

### CONCLUSION

Applicants submit the claims are in condition for allowance, and notification of such is respectfully requested. If after review, the Examiner feels there are further unresolved issues, the Examiner is invited to call the undersigned at (415) 781-1989.

Respectfully submitted,  
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Filed under 37 C.F.R. §1.34(a)

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SF-1107421v2